2017

Catfish hatchery and grow-out

Aquaculture Department, Southeast Asian Fisheries Development Center

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http://hdl.handle.net/10862/3543

Is **CATFISH** seed production profitable?

Technical assumptions for seed production

Item	Broodstock	Hatchery
Project duration (years)	5	5
Days of culture/crop		15
No. of runs/year	12	10
No. of tank or pond	4 ponds	12 tanks
Size of tank or pond	100 m^2 pond	1-ton tank
Age of fish (days)	at least 180	4-15
Feeding rate (% body weight)	3	50
Stocking density	10-15 pcs/m^2	100 pc/liter
Survival rate (%)	0 for males; 90 for females	25
Number of fish/per run (pcs)	20 males, 50 females	120,000
Selling price of fry (PhP/pc)		0.4
Gross sales per run (PhP)		48,000

Costs-and-returns analysis (per run)

Total variable cost (PhP)	8,560
Total fixed cost (PhP)	15,204
Income (PhP)	24,236
Internal rate of return (%)	158
Return-on-investment (%)	159
Payback period (year)	0.59
Break-even price (PhP)	0.2
Break-even production (pcs)	600,832

Is **CATFISH** farming profitable?

Technical assumptions for grow-out in ponds

Item	
Project duration (years)	5
Total pond area (m^2)	1,000
Stocking density (pcs/m^2)	10
Total stock (pcs/crop)	10,000
Number of crops per year	2
Average body weight at harvest (g)	110
Feed conversion ratio	2.3
Target production per crop (kg)	770
Price/kg (PhP)	130
Gross sales per crop (PhP)	100,100

Costs-and-returns analysis (per crop)

Total variable cost (PhP)	69,089
Total fixed cost (PhP)	8,040
Net income (PhP)	22,971
Internal rate of return (%)	148
Return-on-investment (%)	80
Payback period (year)	1.2
Break-even price (PhP)	100
Break-even production (pcs)	593

Need **ASSISTANCE**?

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Catfish Hatchery and Grow-out Operations training course at AQD's Binangonan Freshwater Station and Tigbauan Main Station. To apply, kindly contact:

Training and Information Division
(63-33) 330 7030
training@seafdec.org.ph

Check out our training schedule:
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Talk to us!

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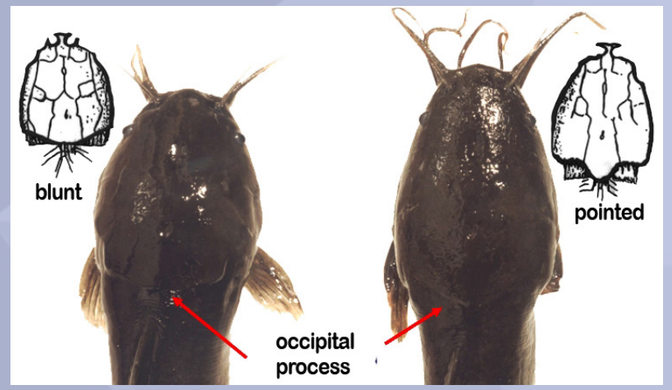
CATFISH
Hatchery and Grow-out

Southeast Asian Fisheries Development Center
AQUACULTURE DEPARTMENT
www.seafdec.org.ph

Why **CATFISH**?

Catfish, *Clarias* spp. (hito, paltat, pantat, and ito locally) is one of the most important freshwater food fishes in Southeast Asia. Catfish farming does not require a large area, can thrive in poor water quality conditions, can be raised at high stocking densities using formulated diet, is not susceptible to diseases and less labor intensive.

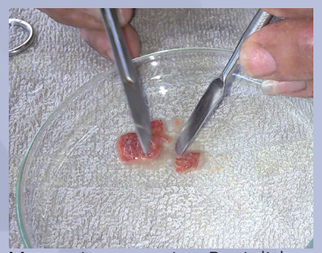


Asian catfish species *Clarias macrocephalus* (left) and *C. batrachus* (right)

How to breed and culture **CATFISH**?

Spawning

- Depending on the larvae requirement, 100-150 g or 6-8 months old catfish broodstock (2:5, male to female ratio) are placed in separate holding containers.
- Determine the total body weight (BW) of female catfish to be spawned artificially and prepare hormones to be used. Pituitary glands, human chorionic gonadotropin (HCG), luteinizing hormone-releasing hormone analogue (LHRHa) + pimoside (PIM), Ovaprim, or Ovatide may be used. Injection dosages as administered to female broodstock are as follows:
    - 1 homogenized pituitary gland/100 g BW
    - 400 I.U. human chorionic gonadotropin (HCG)/100 g BW
    - 0.005 mg luteinizing hormone-releasing hormone analogue (LHRHa) + 0.1 mg pimoside (PIM)/100 g BW
    - 0.02 mL Ovaprim/100 g BW
    - 0.02-0.05 mL Ovatide/100 g BW


Macerating testes in a Petri dish

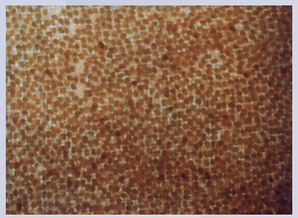
- Anaesthetize the female catfish by placing them into a pail with 10 liters of tap water mixed with 5 mL anaesthesia (2-phenoxyethanol). Pat dry the fish and inject hormone to dorsal musculature.
- Anaesthetize males, pat dry, make an L-shape cut to open the abdomen and take out the testes. Place this in a Petri dish, rinse with 0.9% NaCl, blot-dry, transfer to a clean dish, macerate, and add 0.9% NaCl to obtain milt solution. Add more 0.9% NaCl, if needed, to make sure that eggs are totally exposed to the sperm.


Stripping of female catfsh

- Press the abdomen of the female to strip eggs into a clean, dry bowl or basin. Pour the milt solution into the bowl or basin and mix for 30 to 60 seconds using a feather (one male catfish i.e. full of milt can fertilize eggs of two female catfish). Add 5 mL tap water, mix further to ensure fertilization and transfer fertilized eggs to a scoop net. Wash with running tap water to remove excess milt. Spread the eggs on a net tray inside a flow-through hatching trough or basin. Maintain water level of about 10 cm inside the trough or basin.
- Observe if most larvae have hatched 24-30 hours after fertilization and incubation. Feed larvae with natural food organisms like *Moina* neonates, *Artemia* nauplii or Tubifex worms.

Larval rearing

- Transfer 4-6 day-old larvae into tanks with 10-15 cm water level. Stock at 100-150 larvae/L. Aerate mildly, place shelters at the bottom, and feed larvae with newly-hatched *Artemia* nauplii at 10 individuals/mL thrice a day. Change about 30% of the water in the larval rearing tanks daily.


Catfsh larvae

- Feed 7-10 day-old larvae with the cladoceran *Moina* or *Daphnia* (water fleas) at 5-10 individuals/mL thrice a day for another 4 days; otherwise, continue feeding *Artemia* nauplii.
- Start feeding the larvae with SEAFDEC/AQD formulated diet in the morning of day 10 and give natural food organisms in the afternoon. Change 50% of water daily from hereon.
- Continue giving catfish feeds until larvae can be transferred to a nursery system on day 15.

Grow-out in ponds


Draining and levelling of a pond


Selection of healthy and uniform-sized fingerlings

- Drain, level, and dry pond bottom for 2-3 weeks. Repair gates and screens. Check dike for leaks and seepages. Eradicate unwanted species using lime. Apply lime at 500-1,000 kg/ha. Apply cow or chicken manure at 500-1,000 kg/ha. Install a fence 20-30 cm high along the perimeter dike. Let in water at an initial depth of 10-20 cm and allow to settle for 7 days. Apply inorganic fertilizer 16-20-0 at 50 kg/ha and urea at 25 kg/ha. Increase water depth to 50-60 cm.
- Select healthy and uniformly sized fingerlings with average body weight of 3-5 grams. Acclimate fingerlings before stocking. Stock fingerlings at 5-20 pcs/m^2.
- Give catfish feeds twice daily at 5% of the total biomass for the first month, decreasing by 0.5% every month until the fifth month of culture. Trash fish, chicken entrails mixed with rice bran, kitchen refuse or stale bread may also be given to catfish.
- Follow the usual pond routine of stock sampling, water monitoring, survival monitoring & observing for signs of disease or abnormality, and farm records keeping.
- Prior to harvest, cook some catfish samples to detect off-flavor. If detected, delay the harvest and determine the cause. Replenish 60-80% of pond water for 2-3 days. Hold harvested fish in tanks with running water for a few days.
- Harvest fish when they reach 80-200 grams after 3-5 months of culture. Catfish are marketed live.